TPC Offline Update

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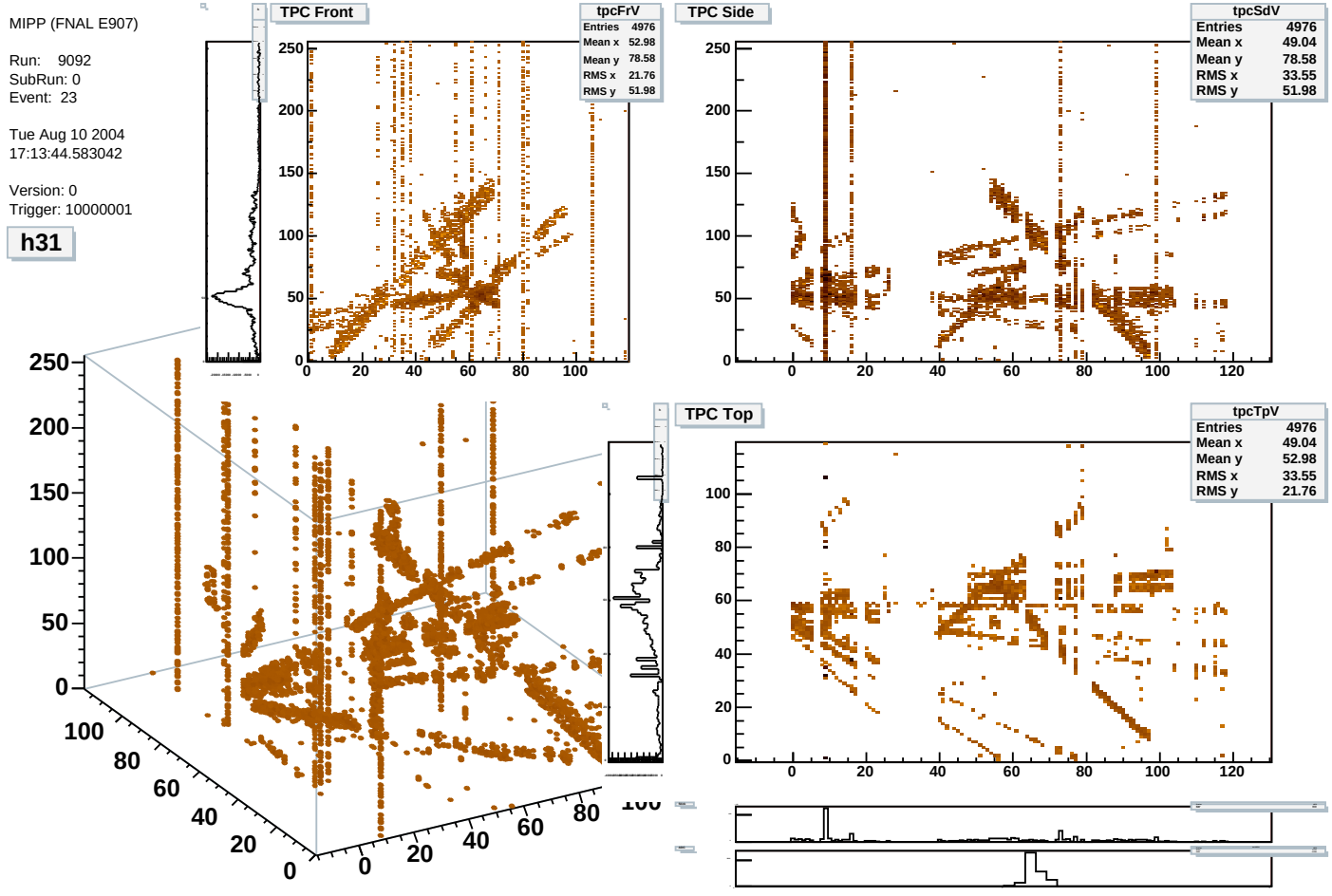
Outline

- Review of current status
- Works-in-progress
  - Near-term
  - Long-term

Current Status

- Unpacking of compressed and uncompressed data works (we know, or think we know, because:)
  - We can see tracks in the TPC (via: Event Display)
  - We are able to monitor the TPC via OnMon

Tracks in the Event Display



- Obviously we need to clean this up a bit...

Keeping an eye on the TPC

Currently in the OnMon, we have the following plots for the TPC:

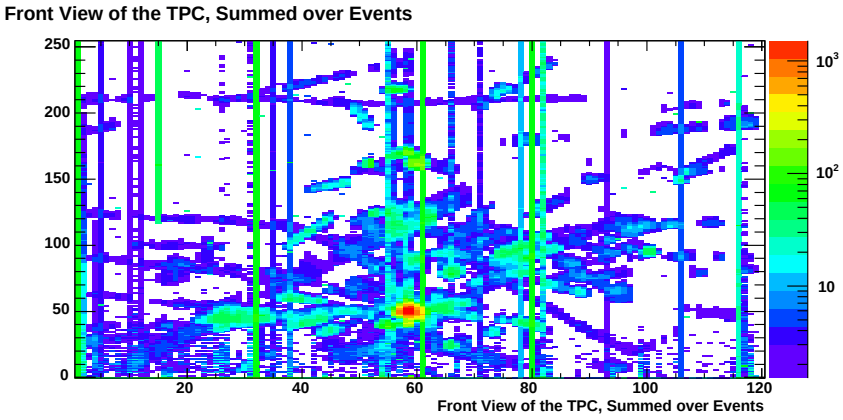
- Front, Side and Top Views
- ADC Distribution
- Time Bucket Distribution (y-position)
- Column Distribution (x-position)
- Row Distribution (z-position)
- Hits/Event Distribution
- Power Supply (PS) Voltage Distributions
- Stick Temperature Distributions

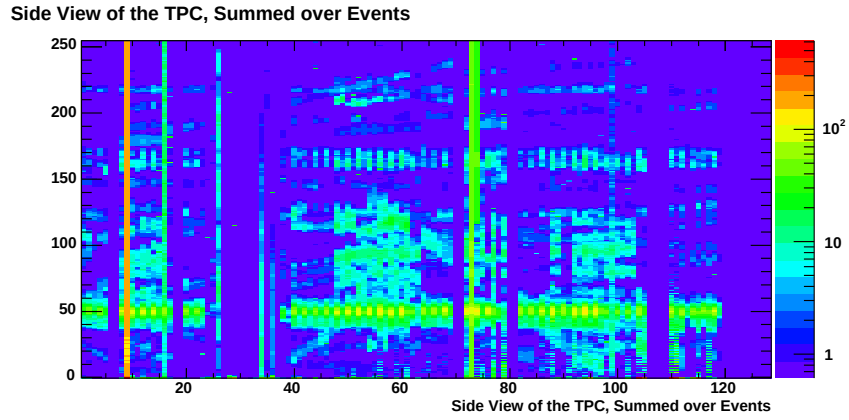
Keeping an eye on the TPC

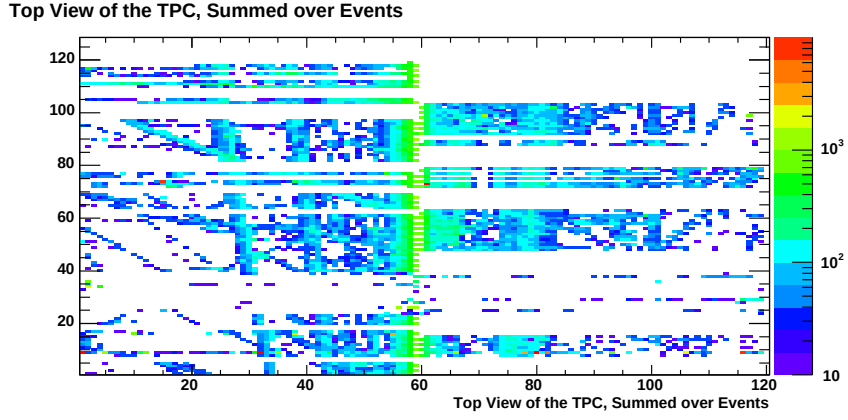
Some things to remember:

- all plots, *except the ADC dist.*, are for ADC values above a threshold of 144 ADC counts
- all plots are summed over events, therefore don’t expect to see single tracks!
- it may be useful to set the y- or z-axes to log scale

Some OnMon Examples

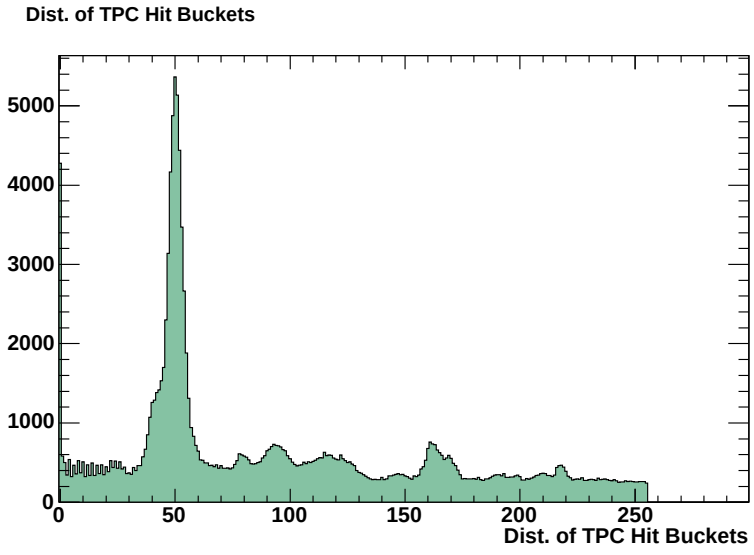


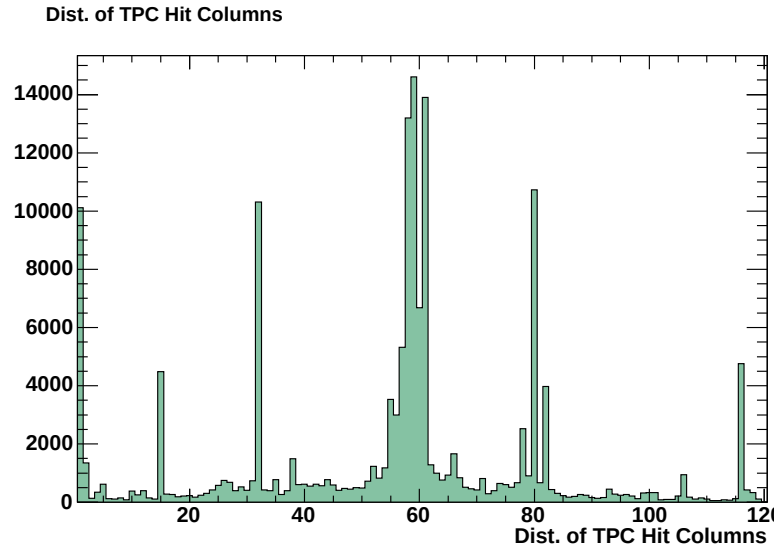


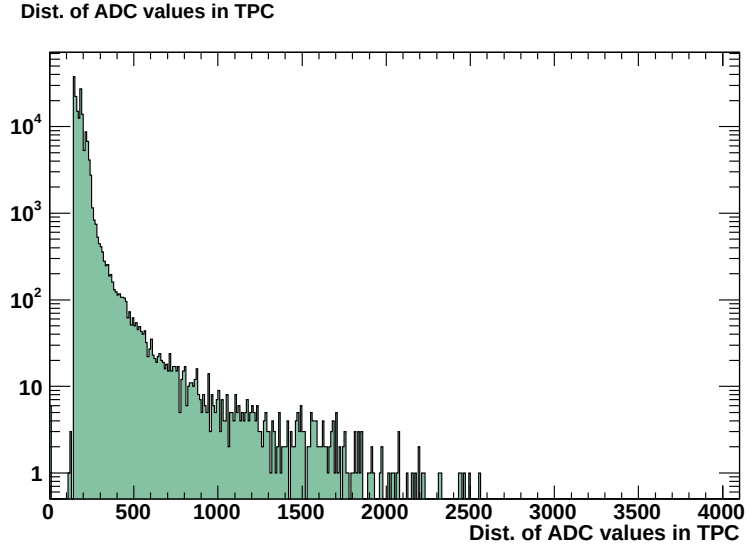


- These were plotted on log z scale.

Some (More) OnMon Examples







What's in the Works?

- TPC track reconstruction.
- I am currently overhauling the code in order to:
  - better understand it myself
  - make the reconstruction code work with anamipp (JobCModule)
  - allow for an easier method to check results step-by-step
- I am attempting to implement the algorithm described in Dr. Xihong Yang's (E910) Ph.D. thesis. I won't go into details here.
- I have used some of Andre's TPCReco code.

Where I am Now

- In short, the first step of Yang's algorithm requires the formation of the individual 2-D clusters in each pad row (along the z-direction)... I almost have this completed.
- As a first and simple step, I will simply take the ADC weighted mean for the x- and y-positions of each cluster to form *hits* in each plane.
- Next step will be to form tracks ...

Long term goals

- Implement full TPC tracking and dE/dx calculations.
- Adjust the Monte Carlo so that the TPC tracks look more realistic (ie: add noise, make some channels dead, etc.)